

Patent Claims

1. A cooling apparatus having a cooling structure (10) that comprises at least one surface area (20) for introducing heat, and a cooling member (18) that is connected to the cooling structure (10) in a heat-conducting manner, wherein the cooling member (18) is moveable so as to generate an air flow (24, 25) by means of the movement of the cooling member (18), the air flow (24, 25) supporting heat emission from the cooling member (18) to the environment.
2. A cooling apparatus according to claim 1, characterized in that the cooling member (18) is fixedly connected to a shaft (16) and the shaft (16) is rotatably supported in the cooling structure (10).
3. A cooling apparatus according to claim 2, characterized in that the cooling member (18) has a plurality of blade-like cooling surfaces that project in a radial direction from the shaft (16).
4. A cooling apparatus according to claim 2, characterized in that the cooling member (18) has a plurality of vane-like cooling surfaces that project in a radial direction from the shaft (16).
5. A cooling apparatus according to one of the claims 2 to 4, characterized in that the shaft (16) is connected to an electric drive unit (17).
6. A cooling apparatus according to one of the preceding claims, characterized by an air guiding device (19) to direct the air flow.
7. A cooling apparatus according to claim 6, characterized in that the air guiding device (19) comprises a cover plate that separates an air suction side and an air release side.

8. A cooling apparatus according to claim 2 and 7, characterized in that the cover plate (19) coaxially encloses the shaft (16) and has a central aperture (23) so as to define a flow channel in the vicinity of the shaft (16).
9. A cooling apparatus according to one of the preceding claims, characterized in that the cooling structure (18) comprises a container that is filled with a high heat-conducting medium (14).
10. A cooling apparatus according to claim 9, characterized in that the container (10) is made of a high heat-conducting material, particularly copper or aluminum.
11. A cooling apparatus according to claim 9 or 10 and 2, characterized in that the shaft (16) is supported in the container (10) by roller bearings (13).
12. A cooling apparatus according to claim 11, characterized in that the shaft (16) extends into the container (10) and is fixedly connected to a rotating member (15) within the container (10).
13. A cooling apparatus according to claim 12, characterized in that the shaft (16) and the rotating member (15) are made of a high heat-conducting material, particularly copper or aluminum, and are connected to each other in a high heat-conducting manner.
14. A cooling apparatus according to claim 12 or 13, characterized in that the rotating member (15) comprises a disk for generating a flow in the heat-conducting medium (14).
15. A cooling apparatus according to claim 14, characterized in that the disk (15) has openings.